

AD-A283 126

Public rep  
gathering  
collection  
Davis High

N PAGE

Form Approved

OMB No. 0704-0188

hour per response, including the time for reviewing instructions, searching existing data sources, collection of information. Send comments regarding this burden estimate or any other aspect of this report Headquarters Services, Directorate for Information Operations and Reports, 1215 Jeffersonment and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)

2. REPORT DATE

April 1993

3. REPORT TYPE AND DATES COVERED

FINAL

4. TITLE AND SUBTITLE

WHY GPALS? A SUGGESTED APPROACH FOR THE  
IMPLEMENTATION OF THE SYSTEM

5. FUNDING NUMBERS

6. AUTHOR(S)

SAMUEL E. GARCIA  
COL, USAF

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

AIR WAR COLLEGE  
325 CHENNAULT CIRCLE  
MAXWELL AFB AL 36112-64278. PERFORMING ORGANIZATION  
REPORT NUMBERUnnumbered AWC research  
paper

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

N/A

10. SPONSORING/MONITORING  
AGENCY REPORT NUMBER

N/A

11. SUPPLEMENTARY NOTES

PAPER IS WRITTEN TO FULFILL ACADEMIC RESEARCH REQUIREMENTS FOR AN IN-RESIDENCE  
SENIOR SERVICE PROFESSIONAL MILITARY SCHOOL.

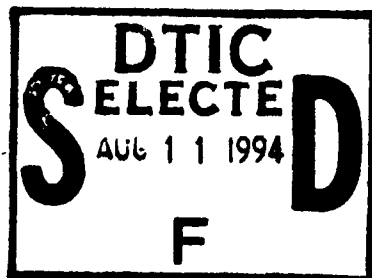
12a. DISTRIBUTION/AVAILABILITY STATEMENT

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

See page iii

53P 94-25235  


14. SUBJECT TERMS

GPALS, Suggested, Approach, Implementation.

15. NUMBER OF PAGES

27

16. PRICE CODE

17. SECURITY CLASSIFICATION  
OF REPORT  
UNCLAS18. SECURITY CLASSIFICATION  
OF THIS PAGE  
UNCLAS19. SECURITY CLASSIFICATION  
OF ABSTRACT  
UNCLAS20. LIMITATION OF ABSTRACT  
UL

AIR WAR COLLEGE

AIR UNIVERSITY

WHY GPALS?

A SUGGESTED APPROACH FOR THE IMPLEMENTATION OF THE SYSTEM

by

Samuel E. Garcia  
Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE CURRICULUM

REQUIREMENT

Advisor: Colonel Kenneth Walsh

MAXWELL AFB, ALABAMA

April 1993

# DISCLAIMER

This study represents the views of the author and does not necessarily reflect the official opinion of the Air War College or the Department of the Air Force. In accordance with Air Force Regulation 110-8, it is not copyrighted, but is the property of the United States government.

Loan copies of this document may be obtained through the interlibrary loan desk of Air University Library, Maxwell Air Force Base, Alabama 36112-5564 (telephone [205] 953-7223 or DSN 493-7223).

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification .....	
By .....	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

## ABSTRACT

**TITLE:** Why GPALS? A Suggested Approach for the Implementation of the System.

**AUTHOR:** Samuel E. Garcia, Colonel, USAF

GPALS, the Global Protection Against Limited Strikes system, is the most recent evolution of the Strategic Defense Initiative. It is proposed for deployment in three parts: the theater segment, the national segment, and the Global Missile Defense segment containing the Brilliant Pebbles interceptor. Basic arguments both for and against the system are based on cost, the threat, the Anti-Ballistic Missile (ABM) Treaty which bans space-based ABM systems, perceived Soviet opposition, and finally the need for a perfect defense. A solid case can be made for the near term deployment of the theater segment to provide protection for US allies, and deployed troops, particularly in light of the increased role the US expects to play in regional conflicts in coming years. Likewise, the evolving threat from the Third World and the proliferation of nuclear and ICBM technology argue for a ground based national segment to protect the United States. This segment can be phased in more gradually as the budget allows since the threat is less immediate. The space-based global segment should not be deployed until significantly more research is done to decrease the cost. However, the research should continue against the day the threat is imminent.

## BIOGRAPHICAL SKETCH

Col Garcia graduated from Texas A&M University in 1971 with a bachelor's degree in Industrial Engineering, and received an MBA from the University of Utah in 1979. He entered active duty in June 1972.

He served in a variety of base and major command level Civil Engineering assignments early in his career. In 1984 he joined the Hq USAF staff, where he served as the Point of Contact for the Air Force Facilities Board until 1986.

In July 1986, Col Garcia assumed command of the 314th Civil Engineering Squadron at Pope AFB, NC. After three years there as the Base Civil Engineer, he joined the Military Airlift Command staff as the Chief of the Maintenance Management Division.

In January 1991, he was selected for the position of Executive Officer to the DCS for Logistics and Engineering. In January 1992, he rejoined the Engineering staff as the Director of Operations and Readiness. He is currently attending the Air War College.

Col Garcia is a graduate of the Air Command and Staff College, and a recipient of the Meritorious Service Medal with three oak leaf clusters, and the Air Force Commendation Medal with one oak leaf cluster. He is married to the former Joyce R. Kashiwabara of Honolulu Hawaii. They have two children, Samantha and Steven who are 11 and 8 years old respectively.

Col Garcia was promoted to Colonel on 1 September 1992.

## TABLE OF CONTENTS

DISCLAIMER.....	ii
ABSTRACT.....	iii
BIOGRAPHICAL SKETCH.....	iv
Chapter	
I. INTRODUCTION.....	1
II. DESCRIPTION OF GPALS.....	3
III. GPALS--PROS AND CONS.....	7
IV. RATIONALE SUPPORTING A PARTIAL DEPLOYMENT OF GPALS.	15
V. POSSIBLE DEPLOYMENT MODES FOR THE GPALS SYSTEM.....	20
VI. CONCLUSION.....	24
LIST OF REFERENCES.....	26

## CHAPTER ONE

### INTRODUCTION

With the close of the Cold War, the nuclear strategic balance that the world had come to know during the 60's, 70's, and 80's also came to an end. With the demise of that balance, the nuclear deterrent strategy of Mutual Assured Destruction (MAD) that was so painfully plotted out by successive waves of American administrations, think tanks, defense officials, intellectuals, and the US Congress became unnecessary and to a great degree irrelevant. Our capability and our readiness to annihilate any country that might attack us with ballistic missiles have become superfluous in view of the fact that the most realistic future threat is probably now from a Third World country with only a small number of warheads, a terrorist organization, or an unauthorized launch by a major world power (China, or a former Soviet republic). (1:13) Add to this the evolving views of the former Soviet Union on the utility of missile defenses and their interest in joint approaches to such systems and it is clear that the old paradigms that restricted the development and deployment of antiballistic missile systems have shifted.

As nuclear and ballistic missile technology and hardware become more obtainable, it makes sense to develop and deploy a defensive system that will provide the US, its

allies, friends, and deployed forces a measure of protection against such attacks.

The purpose of this paper is to review the current elements of the latest evolution of the Strategic Defense Initiative (SDI), now referred to as GPALS--Global Protection Against Limited Strikes; summarize the current arguments both for and against the deployment of an ABM system; and propose some possible deployment modes that might be acceptable to both sides of the debate.



## CHAPTER TWO

### DESCRIPTION OF GPALS

The Global Protection Against Limited Strikes, or GPALS program, has evolved from the original Strategic Defense Initiative(SDI) program originated by President Ronald Reagan. SDI's first objective was to:

"...deter a massive Soviet first strike by destroying a significant percentage of several thousand attacking nuclear warheads. Under the new GPALS programme, the objective is to protect the United States, our forces overseas, as well as our allies and friends, by destroying the warheads of limited ballistic missile strikes (up to 200 warheads) launched from anywhere on earth." (2:28)

It is important to realize that the evolution of SDI to GPALS was driven by "...a perceived lessening of the Soviet threat and the emergence of tactical ballistic missile threats from Third World countries...." (3:2) The fact that it is intended to defend against only a limited number of incoming warheads (200), leaves the US open to a first strike by Russia, and does not upset the nuclear balance that has been crafted between the two countries through the cold war and recent START agreements.

GPALS will consist of three types of systems to protect against ballistic missile attacks:

1. **Sensors:** Surface and space (satellite)-based sensors to detect, discriminate, and track missiles and warheads.

2. **Interceptors:** Surface and/or space-based interceptors to destroy them.

3. **BM/C3 Systems:** Battle Management/Command, Control, and Communications (BM/C3) Systems to integrate the sensors and interceptors into a viable unit for interception of attacking missiles. (3:13)

The three types of GPALS systems will be deployed in the following ways (called "segments") to deal with specific threats:

1. **Theater segment:** The theater segment will consist of deployable surface-based (land and sea) radars and interceptors, designed to protect deployed US Forces, allies, and friends, against tactical ballistic missile threats. These interceptors will target warheads in the midcourse and terminal phases of flight, and will receive early launch detection and missile tracking information from surface and space-based sensors. After detection of the launch by existing early warning satellites, space-based tracking sensors, currently called Brilliant Eyes, will track the missiles through their midcourse phase, differentiate between warheads and decoys, and provide this information continuously to the interceptors in all three segments. (3:13; 4:F-1) Finally, surface-based sensors tied to the interceptors will take over and guide the defensive missiles to their targets.

2. **National segment:** The national segment will protect the United States proper against ballistic missile

attacks from any source. It will combine ground-based interceptors at five to seven sites across the United States with surface and space-based (Brilliant Eyes) sensors, to attack incoming missiles. (3:13; 2:28)

3. **Global missile defense segment:** The global defense segment will consist of a space-based combination sensor and interceptor system, currently called Brilliant Pebbles (BP), working with existing early warning satellites and Brilliant Eyes (BE) sensors to detect and intercept warheads in the boost and midcourse phases of their flight. Brilliant Pebbles, the most controversial and best recognized component of the GPALS program, consists of a constellation of several hundred individual interceptors orbiting the earth in rings.

"The constellation would be deployed in such a way as to provide continuous global coverage for detection and interception of ballistic missiles. Once enabled by human command, the Brilliant Pebbles could select their targets and divert from their orbits into the path of enemy missiles. The Brilliant Pebbles interceptors would carry no explosives, but the force of their high-speed collision is expected to destroy targets." (5:10)

It is significant to note that the BP interceptors will be able to engage only targets that attain altitudes of 50-60 miles and have ranges of at least 250-375 miles. (5:15) While this rules out a number of the short range missiles currently owned by Third World countries, computer simulations show that the system could have engaged over 80% of the intermediate range missiles launched during Desert Storm. (5:20) Brilliant Pebbles is designed to provide a

significant "first layer of defense" in support of both the theater and the national segments. The surface-based interceptors of both segments would subsequently engage the warheads that survived the BP "first layer" defensive line.

While many of its component parts are controversial, it is the cost of the overall GPALS system that generates the most emotion. Currently estimated at over \$40 billion, it is clearly in the same league with the B-2 bomber. Having attained that stature, the system is undergoing justifiable scrutiny from the Congress, which questions not only the cost, but also the need for such a system during a period of decreasing tensions. (6:79)

We will review some of the most pertinent arguments both for and against the system in the following chapter.

### CHAPTER THREE

#### GPALS--PROS AND CONS

Critics and proponents of a GPALS type system, particularly one with a space based interceptor component, are numerous. The most common arguments are noted below.

##### 1. **COST:**

a. **AGAINST:** With a Strategic Defense Initiative Office (SDIO) estimate of \$44 billion, and a history of past DOD high tech projects that regularly overshoot their initial estimates by 50-100%, critics claim that deployment of the total GPALS system will cost the US nearly \$100 billion to field. Follow on projects to grow the system could run much higher with a trillion dollars sometimes mentioned. (7:17) Allegations of mismanagement have led to investigations of the SDI Office and descriptions of the program as a "high-risk, space-age national security pork barrel for contractors and top government managers." (8:22) Even those who partially support the program argue that before the space-based (highest-risk) segment can be deployed, it must demonstrate not only mission effectiveness but also cost efficiency compared to alternatives. (9:18) They note that the nation argued for four decades about the possibility of a "worst-case, Soviet bolt-from-the-blue" attack before finally dismissing it; it should not tie up the national economy now, agonizing over another "worst

case" possibility when a lesser level of protection against a more probable threat might suffice. (10:20)

b. **FOR:** Proponents argue that technological advances and changes in the SDI architecture have significantly lowered the cost of deploying such a system. (6:79) Moreover, they argue that even if the system is imperfect, it can be looked upon as an insurance policy against a low-level attack or accidental launch, and as such represents a prudent investment. (10:20) From a strict economic standpoint it can be noted that the SDI program is one of the few high technology areas in which the US clearly has the lead over the rest of the world. The program has created significant technological spin-offs for the US defence and civil sectors and, in the absence of a strong US economy, is the main technological point of interest for the US allies. (11:1)

## 2. **THREAT:**

a. **AGAINST:** Opponents state that there is no threat against the US that justifies such an expenditure. The Third World countries that possess or are obtaining missiles are acquiring short and intermediate range systems to be aimed at regional rivals primarily on their borders. Such weapons do not have the range to threaten the USA. A more likely approach to deliver a nuclear weapon against the United States would be to simply mail it to us inside a crate or to place it in a ship sailing into the country. Countries with the technical knowledge to develop long range

weapons, have no conceivable incentive to threaten us.

(7:16) Countries without that knowledge will have to court bankruptcy to acquire it, and even if they do they will think twice about entrusting their small supply of nuclear weapons to a capricious long-range rocket. (8:22) Critics note that accidental or unauthorized launches never occurred in the course of the Cold War due to the Soviet Union's tight technical and procedural safeguards. They can cite testimony by both Gen Colin Powell, Chairman of the Joint Chiefs of Staff, and Mr. Robert M. Gates, former CIA chief, that in spite of the break-up of the USSR, the controls are still in place and should continue to insure a tight rein over nuclear assets into the future (as events during the coup attempt of 1991 proved). (7:16-17; 8:22)

b. **FOR:** While proponents of the ABM systems concede that hostile Third World countries do not now have the ability to attack the United States, they are presently able to threaten our allies (Israel, Saudi Arabia, South Korea), and US troops deployed overseas. Supporters can cite CIA testimony to Congress...

"...that in seven or eight years, twenty nations are liable to have ballistic missiles and that perhaps fifteen third-world countries may well have their own missile-production facilities within that time frame."  
(12:23)

The large air and sea port facilities the US requires to land and sustain troops overseas are particularly susceptible to existing theater range threats. Moreover, an

inability to extend protection to allies and friends may significantly impact the number that are willing to join us in future coalitions. The incoming director of the Central Intelligence Agency, R. James Woolsey, Jr., has testified that there will be "...in as little as ten years, an ICBM threat to the Continental US..." (13:25) from countries that do not already pose one. Proponents argue that irrespective of the CIA estimates, the proven ability of many Third World countries to rapidly acquire long-range weapons of mass destruction (longer-ranged than they currently control), coupled with their involvement in terrorist activities' makes it reasonable to acquire at least a limited ABM capability. (1:13-14) Such a limited capability would also serve the US well in the event of an accidental launch of a weapon by one of the newly created republics of the former USSR, who, in spite of their strong safeguards "...will be in a chaotic state for the foreseeable future..." (10:20)

### **3. ABROGATION OF THE ABM TREATY:**

a. **AGAINST:** The 1972 ABM Treaty clearly prohibits the United States and the Soviet Union from developing, testing, or deploying space-based ABM systems or their components. (14:125) SDI critics charge that deployment of the proposed space-based interceptors or sensors will require drastic revisions to the treaty that will seriously undermine it and possibly destroy one of the primary foundations for current arms control negotiations. (7:17) Their arguments are based on the conviction that deterrence remains the foundation of



US strategic doctrine, that the restraint of the treaty on US and Russian missile defense programs insures the viability of deterrence into the future, and that without it there would be no START agreements. (7:14)

b. **FOR:** Supporters point out that treaties and agreements are only as dependable as the people that sign them--and then note that Iraq was a signer of the 1925 protocol forbidding the use of poison gas but used it extensively in its war with Iran. (12:25) They further point out that the primary weakness in the MAD deterrence strategy is that..."It assumes that hostile leaders will be rational and governed by reasonable standards of prudence." (12:26) They contend that while this may have been a reasonable assumption when only the superpowers possessed nuclear weapons, it has lost validity given the current crop of leaders in the Third World; i.e., they no longer pass the "rational leader" criteria. Proponents also contend (somewhat weakly) that the GPALS systems can be deployed with only minor revisions to the ABM treaty that would in no way abrogate it. They point to the Russian willingness to sign the SALT I treaty in spite of the on-going SDI program and argue that the SDI program has been our strongest negotiating tool for arms control. (6:81) Moreover, they cite recent Russian statements during the discussions exploring development of a Global Protection System (see below), which appear much more flexible toward the treaty than in the past. (15:68)

#### **4. SOVIET OPPOSITION:**

##### **a. AGAINST:**

"...A powerful charge against the SDI in the past has been that the deployment would be viewed by the Soviet Union as a provocation and thus it would undermine East-West political relations..." (15:69)

Opponents of GPALS argue that if the US were to amend the ABM Treaty to allow deployment of a national or space based defense (or were to simply abrogate it and deploy one unilaterally), it would effectively kill any hope for further reductions in nuclear arsenals. In effect it would be giving aid and comfort to those hard-liners in the hierarchy of the CIS that are seeking to avoid the deeper cuts in strategic weapons that other leaders now appear willing to accept. (7:18)

**b. FOR:** Proponents hold that events of the past year show clearly that the Russian position has evolved from their earlier hard-line opposition to the missile defense program:

"The redirection of the SDI toward GPALS established the program as a response not to Soviet missiles, but, primarily, to a problem confronting both the Soviet Union and the West-the proliferation of ballistic missiles and weapons of mass destruction. Because of their obvious concern about this problem, Soviet commentary on BMD (Ballistic Missile Defenses) following the introduction of GPALS became increasingly sympathetic to cooperation with the United States on missile defense." (15:62)

This sympathy became evident when, in response to President Bush's call for joint steps to explore deployment of defenses against limited ballistic missile attacks,

President Yeltsin announced a "'readiness to work out and subsequently to create and jointly operate' a Global Protection System (GPS)." (15:61) His response, and the high level US-Russian negotiations on GPS that have taken place since, have led supporters of SDI to begin to characterize it as a system that will contribute to East-West stability particularly if deployed in such a way that both countries realize benefits from the system. (15:69-70)

**5. NEED FOR A PERFECT DEFENSE:**

a. **AGAINST:** Some critics argue that the SDI program will never be able to provide an impenetrable umbrella against a missile attack.

"Harold Brown argued in a March 1983 Washington Post column: 'If a single weapon can destroy a city of hundreds of thousands, only a perfect defense (which, moreover, works perfectly the first time) will suffice.'" (6:79)

His premise is that if the defensive system does not work perfectly, the consequences are so catastrophic that all of the resources invested in developing and fielding it would have been wasted, or would have been better spent in continued pursuit of deterrence which, for all its faults, won the Cold War.

b. **FOR:** Supporters counter that no weapons system works perfectly every time and that criteria such as Mr. Brown's are unattainable and unfair. Their strongest argument cites the Patriot missile system's performance

during Desert Storm, which, while imperfect, was vastly better than no defense at all. (6:79)

Given these arguments as background, a reasonable approach to the implementation of the GPALS system does present itself and its justification is outlined in the next chapter.

## CHAPTER FOUR

### RATIONALE SUPPORTING A PARTIAL DEPLOYMENT OF GPALS

Deployment of a portion of the GPALS system is warranted. The use of the Scud missiles against Allied forces during Desert Storm provided a convincing argument that Third World governments have little compunction about which weapons systems to use against an adversary when their backs are against the wall. Once such a weapon is used, it is of little comfort to the victims that the absence of a defensive system represented a solid cost containment decision.

Iran and Iraq have used their Intermediate Range Ballistic Missiles (IRBM) routinely against each other and are generally the first potential adversaries that come to mind in a threat discussion. Both fail the "rational leader" test discussed earlier; both are solid examples of why the "old paradigm" of deterrence has been badly fractured.

"'...we are no longer dealing with a large country with strong conventional forces.'...the new nuclear threat comes from regional conflicts in the Third World that may be even more dangerous....(then) Rep Les Aspin, D-Wis.,...has warned against the danger of forces 'undeterrable by the threat of retaliation, like Saddam Hussein.'...'If you're dealing with a dictator who has a distorted view of the world and who controls information to his citizens, you can't count on him to behave rationally'...The mere prospect of 'undeterrable' dictators possessing weapons of mass destruction poses a serious dilemma for policy-makers."  
(16:61)

It is just this dilemma that has converted former critics of SDI to supporters of GPALS.

The likelihood of the US involving itself in regional contingencies like the Persian Gulf war has become an accepted tenet of future defense planning. (17:11) Large logistical ports in various regions are critical to our ability to deploy into theaters where our interests are threatened. Large, geographically fixed ports are ideal targets for both nuclear and conventional ballistic missiles. Our ability to defend them (theater segment) will be one of the keys to our future viability as a power projection nation.

Another sobering possibility presents itself in the Balkans. While the present situation in Bosnia has been contained within the former boundaries of Yugoslavia, if such a conflict was to spread and involve the Ukraine or Russia, the resulting instability and chaos could destroy the tight controls that the former Soviet republics have thus far been able to exercise over their IRBM and ICBM weapons. The unauthorized launch of a nuclear or conventional weapon by Serbian (or Bosnian, Croatian, or Muslim) sympathizers against deployed peacekeeping troops or their homelands could escalate the ongoing Balkan conflict out of all intended proportions much as the "unauthorized" assassination of the Archduke Franz Ferdinand did some 80 years ago.

Both the above examples provide viable possibilities in which a missile defense (theater or national segments) against a relatively small number of weapons would be important. Neither case involves the "rational opponent" that classic MAD deterrent theorems were designed to discourage. In neither case would the opponent be attempting (or be able) to destroy the US; they would, more likely, be trying to discourage our involvement, or to exact some price (in blood) for the inevitable destruction they see as imminent. In neither case would a massive, or even a limited nuclear response, be appropriate. A conventional response (i.e., Desert Storm), or no response (in the case of an unauthorized launch) would be more rational. A limited defensive system would provide the US the flexibility to parry (rather than absorb) the intended blow, determine the specific attacker and his intent, and devise the most appropriate (rational) response.

The high cost of all the systems is a valid issue particularly in light of the deficit problem that the US economy presently faces. However, the rapid proliferation of ballistic missiles and the increasing instability in numerous parts of the world makes it increasingly sensible to invest in a defense, and the flexibility that it brings with it, against a limited attack. A reliable ballistic missile defense will not be perfected and deployed overnight and if we wait until a potential adversary has the capability to attack us, we will have waited too long.

The problem posed by the clear ABM Treaty ban on space-based interceptors and sensors is not one that should be passed off lightly: the treaty has stood both the American and the Soviet citizenry in good stead over the last 20 years. However, in light of the increasing numbers of missiles and the possibilities for destruction that their existence poses, it would be in the interests of both the US and the former USSR to formulate revisions to the ABM treaty to allow at least a portion of the GPALS system be developed and deployed (possibly jointly) to provide basic protection against attacks. While unthinkable two years ago, such an idea is clearly within the realm of the possible today. As noted by Aleksey Arbatov, a long time Russian critic of SDI, in June 1992:

"'...the general trend is clear. Numerous statements by senior officials, military commanders, R&D managers, and independent experts...show the growing support in some influential circles for the idea of deploying (including jointly with the US) a large-scale anti-missile system...' (15:70)

On a more philosophical note, it can be argued that the dollars sunk into the SDI program to date are the best investment the US has ever made, in spite of the fact that no system has yet been produced.

"It was SDI, in fact, which escalated the East-West confrontation beyond the point at which the USSR could economically compete in defence terms with the West. The result was that the Soviet Union collapsed,...So in one sense, SDI has already defeated the most significant threat to US security for the past 46 years." (11:1)



It would be ironic if the continued investment of funds into GPALS were to provide the foundation for a solid, mutually beneficial working relationship on which the US and Russia could build their next 40 years of existence. However, this possibility does present itself and should not be overlooked.

Some specific proposals for a limited deployment of the GPALS systems and suggested changes to the ABM Treaty to facilitate such a deployment are outlined in the next chapter.

## CHAPTER FIVE

### POSSIBLE DEPLOYMENT MODES FOR THE GPALS SYSTEM

There are several possibilities that the United States should seriously pursue to allow deployment of at least a limited GPALS capability.

1. **Theater segment:** Since our allies and deployed forces are currently facing viable threats, we should press forward with the Theater Segment of the GPALS system without delay. This segment will require two types of systems to function effectively:

a. Deployable, surface based (land and sea) interceptors will provide the most visible part of the system. These weapons will be totally surface-based (although a link to a space based sensor system is discussed below), will not endanger the ABM Treaty, and will provide us a mobile defense that can protect deploying forces and be shipped to allies in need on relatively short notice.

b. The space-based Brilliant Eyes sensors, while originally to be deployed at the same time as the national segment, should be accelerated and deployed with the theater segment to increase the amount of warning time and the effectiveness of the ground based theater interceptor missiles. The Brilliant Eyes system will "...increase several fold the defended radius of one (interceptor) battery." (18:2-4) One of the strong points of the Brilliant Eyes system is that other interceptors can benefit

from its global tracking capability as well. BE will interface with the Navy Aegis radar system which will control the sea based interceptors and can also be allowed to feed data to other allies' interceptors to improve their coverage. The Israeli Arrow system and any systems eventually developed by NATO countries would be the initial candidates. Given the Russian interest in a joint defense capability and their existing interceptor capabilities, BE could provide the cornerstone for a joint missile warning center (as a tentative first step toward their proposed Global Protection System) to improve their defenses and add stability to their relationship with the US. (4:F-1) As with the ground based national interceptor sites, Brilliant Eyes would require amendments to the ABM Treaty; however, if its capability were shared with the former republics of the USSR, such amendments would probably be easily done under the auspices of the on-going Global Protection System discussions.

2. **National segment:** Given the proliferation of missile and nuclear weapons technology cited above, it is in the nation's best interest to pursue the deployment of a portion of the national segment of the GPALS program. Again, two types of systems are needed for this segment:

a. The deployment of ground-based interceptors should be pursued, starting with the 100 ground based interceptor missiles at the ABM Treaty approved location of Grand Forks, ND. Additional sites (possibly up to the presently proposed

five or seven) should be negotiated into the ABM Treaty in order to allow us to deploy a system that will protect the entire US. One approach during the negotiations would be to allow the Russian (or the CIS) negotiators to acquire as many sites as the US; another would be to allow them to acquire as many sites as needed to cover their entire country. Such sites could be phased in to address the most probable threat areas first and then added onto gradually until the entire country is protected. Both the Russian and the US missiles could be phased in concurrently to insure that no "ABM gap" develops.

b. Again Brilliant Eyes is needed to increase the amount of warning time to the ground based interceptor missiles. Its utilization allows for a reduction in the size, cost, and number of the surface based weapons and sensors while increasing their performance. (18:1-7) As with the theater segment, its capabilities can be shared with the Russians to act as a stabilizing influence and to facilitate its legalization in the ABM Treaty.

3. **Global Missile Defense segment:** At the present time, a constellation of Brilliant Pebbles interceptors is impossible to deploy due to the cost and the perceptions by our former adversaries of the advantages it would provide us. Nonetheless, it would be reasonable to continue research to perfect a space-based, kinetic energy interceptor satellite to be deployed, as conditions permit, in the future. The research should be aimed at lowering the

costs, and the number of interceptors needed in orbit, to provide the US with a minimum level of protection (say, the 200 warhead threat that is the current goal) to complicate the problems of any deliberate attacker, and to insure that an accidental or unauthorized attack would be destroyed. Talks should also continue with the former Soviet republics to completely explore the space based interceptor technology. As with the Brilliant Eyes system, if the protection that Brilliant Pebbles provides from limited strikes could be extended to our allies and friends (to include the former Soviet Union), the task of revising the ABM treaty to accept it would be greatly simplified. Such an approach would have an extremely stabilizing effect upon our relations with the only nations whose nuclear arsenals approach our own.

## CHAPTER SIX

### CONCLUSION

This paper has provided an overview of the GPALS, or Global Protection Against Limited Strikes anti-ballistic missile system, arguments for and against it, and provides a reasonable approach to implementing the system at this time.

The Theater Segment and the National Segment can provide the country a viable protection against realistic threats and should be pursued as outlined above for deployment in the near future.

While there is much to recommend the entire system, the economic problems the country presently faces and the technical problems still to be resolved with the space-based interceptor, Brilliant Pebbles, are significant enough to keep that system from being fielded soon. Both problems together will keep the system grounded until either the threat becomes so significant that it can no longer be ignored, or technical breakthroughs are made that radically decrease the cost or the number of interceptors needed in orbit. It would be wrong at the present time to pour so much money into the space based system that it significantly slows down the theater and national segments that can help us much sooner. (9:18)

In spite of the above, however, the pursuit of some form of a global protection system is worth continued research. While it may never live up to President Reagan's

original vision of "...a shield that could protect us from nuclear missiles just as a roof protects a family from rain..." (19:6), the pursuit of such a system, in conjunction with the former Soviet Union and the rest of the world, may generate the basic trust necessary to insure that such a capability is never needed.

## LIST OF REFERENCES

1. David W. Swindle, Insurance Against Catastrophe: SDI and the Third World Nuclear Proliferation Problem. Newport, RI: Naval War College, 21 June 1991.
2. Henry F. Cooper, "Limited Ballistic Missile Strikes: GPALS Comes Up With an Answer." NATO Review. 40:27-30 June 1992.
3. US. General Accounting Office, Strategic Defense Initiative: Changing Design and Technological Uncertainties Create Significant Risk. Washington DC: February 1992.
4. James Hackett, "To SDI Through 'Brilliant Eyes.'" Washington Times, p F1, January 5, 1993.
5. US. General Accounting Office, Strategic Defense Initiative: Estimates of Brilliant Pebbles' Effectiveness are Based On Many Unproven Assumptions. Washington DC: March 1992.
6. Baker Spring, "MAD Dogs and Congressmen: Arguments Against SDI are Impotent and Obsolete." Policy Review. 58:79-81 Fall 1991.
7. Spurgeon M. Keeny Jr., "Limited ABM Defense: Dangerous and Unnecessary." Arms Control Today. 21:14-18 October 1991.
8. David C. Morrison, "Starburst, SDI After the Soviets." The New Republic. 206:21-23 April 27, 1992.
9. "A Time for Umbrellas. (Defense in the 21st Century)." The Economist. 324:S16-18 September 5, 1992.
10. Michael Krepon, "Limited ABM Defense: A Prudent Step." Arms Control Today. 21:15-20 October 1991.
11. "A Multi-National Role for US SDI Technology?" Defense & Foreign Affairs Strategic Policy. 20:1 February 1992.
12. Robert Jastrow and Max M. Kapelman, "Why We Still Need SDI." Commentary. 94:23-29 November, 1992.
13. David A. Fulghum, "CIA Chief Paints Bleak Threat Picture." Aviation Week & Space Technology. 138:25 March 1, 1993.



14. "Space Law." Air University Publication 18, Space Handbook. Maxwell AFB, AL: Air University, 1985.
15. Keith B. Payne, Linda H. Vlahos, Willis A. Stanley, "Evolving Russian Views on Defense: An Opportunity for Cooperation." Strategic Review. 21:61-72 Winter 1993.
16. Rodman D. Griffin, "Nuclear Proliferation." Nuclear Employment Concepts - WS 632. Maxwell AFB: Air War College, December 1992.
17. Colin Powell, National Military Strategy of the United States. Washington DC: US Government Printing Office, January 1992.
18. Strategic Defense Initiative Organization. 1991 Report to the Congress on the Strategic Defense Initiative. May 1991.
19. Melissa Healy, "'Star Wars' Enters 2nd Decade with \$30-Billion Tab." Los Angeles Times (Wash. Ed.), p6, March 22, 1993.